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CONNECTING A VITAL INDUSTRY JANUARY–FEBRUARY 2018

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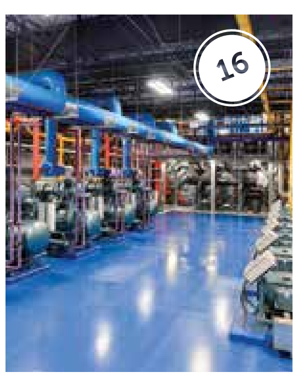
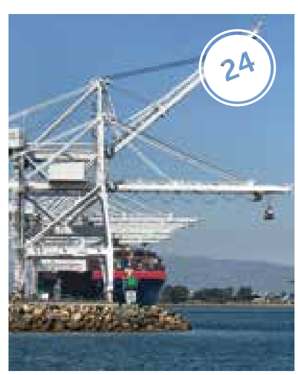




GCCA Customer Research Leading to New Industry Promotions

AS WE COMPLETE THE SECOND YEAR of implementing our strategic plan, I am pleased to report that GCCA is achieving some important goals in areas identified by you, our members.

We are always mindful of our four key business priorities: Grow the Industry, Lead the Cold Chain, Develop Talent, and Drive Supply Chain Profitability.

Within those business initiatives, we are implementing many programs that advance your interests. For example, our global footprint grew substantially this year, bringing to fruition an expanded and more robust GCCA network that is strengthening the cold chain in developing nations and creating new business opportunities. We have a new partnership in Brazil and expanded presence across Latin America, are opening a new office in South Africa, and exploring new opportunities in the Asia-Pacific region.

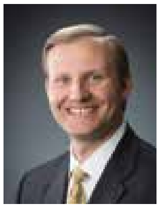
This year we are building on some critical research we have done during the past 18 months to explore GCCA member customer markets more deeply and fine-tune our value proposition. We've sparked important customer conversations in focus groups with food processors and retailers to gauge their perceptions of the cold chain industry, and kicked off further quantitative research in September 2017 to learn more about how 3PLs can become better partners for their customers.

From this, we are launching an industry promotion campaign that will support your own marketing initiatives and communicate our industry value proposition, which includes these three benefits that 3PLs can deliver to customers:

- Deliver a safe, high quality product to the consumer
- Focus on strategic and profitable investments to grow the business
- Optimize cold chain efficiency using science-based resources

This multifaceted promotion campaign will include continued GCCA outreach to food processors and retailers through education programs and exhibits at the Global Cold Chain Expo, pavilions at other trade shows, speeches at customer events, trade press interviews and articles, social media messages, and more. We will also provide tools/resources for members, so they can continue to promote the value the cold chain industry provides to their customers and be an extension of GCCA's industrywide campaign.

Another core piece of our strategic plan is helping cold chain companies find and manage talent. One of the ways we do that is by recognizing outstanding young people who have joined our industry and are providing the new talent we need as they begin their careers. The NextGen Awards program now has competitors from Latin America, Europe, South Africa, Australia, North America and the United Kingdom, and we will honor these future leaders during the NextGen competition to be held this year during the 2018 Global Cold Chain Expo. Moving the competition to the Expo will raise our profile with this key audience and demonstrate how we are always developing talent and looking to the future to better serve customers.



COREY ROSENBUSCH
PRESIDENT & CEO
GLOBAL COLD CHAIN ALLIANCE (GCCA)

COLDFACTS

COLD FACTS magazine is published every other month by the **Global Cold Chain Alliance (GCCA)**, an organization that unites partners to be innovative leaders in the temperature-controlled products industry. The GCCA Core Partners are:

The **International Association of Refrigerated Warehouses (IARW)**, which promotes excellence in the global temperature-controlled warehouse and logistics industry.

The **World Food Logistics Organization (WFLO)**, which delivers education and research to the industry and empowers economic development by strengthening the global cold chain.

The **International Refrigerated Transportation Association (IRTA)**, which cultivates, fosters and develops commercial and trade relations between all those engaged in the transportation and logistics of temperature-controlled commodities.

The **International Association for Cold Storage Construction (IACSC)**, which provides a forum for innovative ideas, promotes standards of practice, and sponsors professional education programs for the cold storage construction industry.

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TAX REFORM
AND THE COLD CHAIN

The tax reform plan passed in late December includes many provisions that will benefit companies in the cold chain.

By Lowell Randel

Tax reform took center stage in Washington, DC in late 2017 as President Trump and Congressional Republicans pushed for a major legislative win before the end of 2017. The failure to repeal and replace Obamacare put tremendous pressure on Republicans in Washington to deliver on one of their major policy objectives ahead of elections in 2018. As a result, the House of Representatives and Senate worked feverishly to complete tax reform. These efforts were successful as the House and Senate passed a comprehensive tax reform package in late December.

The provisions included in the tax reform legislation will have a major impact on cold chain businesses operating in the United States, as well as all individuals living in the United States. Below is a summary of the major business tax provisions included in the bill and an analysis of how they would impact the cold chain:

Corporate Tax Rates

Under the final package, the tax rate for "c" corporations would drop from the current level of 35 percent to 21 percent. The new rate went into effect on January 1, 2018. This is arguably the most positive policy change for companies in the cold chain. Before the reduction, corporations in the United States faced the highest corporate tax rate of industrialized nations. A permanent reduction in the corporate tax rate will help reduce the tax burden on U.S. corporations and make them more competitive on the global stage.

Pass-Through Business Tax Rates

Provisions related to pass-through businesses were hotly contested during consideration of the bill. The House established a very complex system for calculating taxes for pass-through businesses, while the Senate took a relatively simpler approach. The final package follows the Senate approach, with some modifications. Individual taxpayers would be eligible to take a 20 percent deduction on qualified business income from a partnership, "s" corporation, or sole proprietorship. This applies for up to 50 percent of the W-2 wages of the taxpayer who has qualified business income from a partnership or "s" corporation (with some exclusions and phase-in for couples earning less than, or slightly more than, $350,000 or individuals making less than, or slightly more than, $157,500). The bill would also allow specified service businesses to utilize the 20 percent deduction in cases where taxable income is less than $350,000 for married couples and less than $157,500 for individuals.

Pass-through provisions had the potential to derail the bill in both the House and Senate, as many small businesses advocates raised concerns that they would be disadvantaged compared with "c" corporations. Some policymakers were reluctant to make the pass-through provisions more generous, because they could incentivize high-income taxpayers to attempt to convert wages or other compensation for personal services to income eligible for the 20-percent deduction under the provision. The final bill is intended to strike a balance between these concerns, recognizing the importance of giving tax relief to small pass-through businesses, while deterring larger pass-throughs from converting wages to business income eligible for the 20-percent rate.

Corporate Alternative Minimum Tax

The final agreement repeals the corporate alternative minimum tax. In the case of a corporation, the agreement allows the AMT credit to offset the regular tax liability for any taxable year. In addition, the AMT credit is refundable for any taxable year beginning after 2017 and before 2022 in an amount equal to 50 percent (100 percent in the case of taxable years beginning in 2021) of the excess of the minimum tax credit for the taxable year over the amount of the credit allowable for the year against regular tax liability. The full amount of the minimum tax credit will be allowed in taxable years beginning before 2022.

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Estate Tax

The legislation retains the estate tax, but significantly increases the exemption thresholds. Starting in 2018, the estate tax exemption starting for single individuals doubles from $5 million to $10 million and for married couples from $10 million to $20 million. The amounts will be indexed to inflation occurring after 2011. The new thresholds go into effect on January 1, 2018 and expire at the end of 2025.

The doubling of the exemption levels will help many small businesses who have a larger estate than the current exemption levels. However, much effort in Washington has been placed on repealing the estate tax and many are disappointed that the final package does not include a full repeal. It is also concerning that the increased thresholds expire at the end of 2025, setting up the potential return to lower levels if Congress does not take action.

Increased Bonus Depreciation

Companies will be able to immediately write off the full cost of investments in their businesses, starting with assets purchased and placed in service after September 27, 2017 and before January 1, 2023. The write off percentage would then phase out between 2023 and 2027, going down by 20 percent each year.

Companies with plans for investment during the five-year window can take advantage of the 100 percent depreciation allowance. This can be a useful tool for companies to realize the available depreciation benefits of capital expenditures fully in the first year. However, the restricted time window limits the scope of the benefits.

Research and Development Credit

The Research and Development Credit is retained.

Expanded Availability of Cash Method of Accounting

The ceiling for cash method of accounting is increased from $5 million average gross receipts to $25 million.

New Employer Credit for Paid Family and Medical Leave

The tax bill creates a new credit for wages paid to employees on paid family and medical leave under the Family Medical and Leave Act (FMLA) if certain conditions are met. However, this credit is only effective for 2018 and 2019. An eligible employer is one who has in place a written policy that allows all qualifying full-time employees not less than two weeks of annual paid family and medical leave, and who allows all less-than-full-time qualifying employees a commensurate amount of leave on a pro rata basis.

Deduction for Business Interest

Effective in 2018, businesses would only be able to deduct net interest expenses incurred by a business up to 30 percent of the business's adjusted taxable income.

Small Business Exception from Limitation on Deduction of Business Interest

Effective in 2018, companies with average annual gross receipts of $25 million or less would be able to continue to deduct business interest.

Summary

Congress and the Administration successfully raced to complete tax reform by the end of 2017, handing Trump and Congressional Republicans a much-needed legislative win. Many cold chain companies operating in the United States will stand to benefit under the news tax structure. The lowering of the corporate rate to 20 percent will be an automatic benefit to "c" corporations. For pass-through businesses, the calculation of impacts is more complicated, but still an improvement over the current rates these companies face. In addition to the lowering of tax rates, the increased exemptions of the estate tax, along with several other favorable business tax policies should provide benefits across the cold chain.

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By Alexandra Walsh

COVER STORY

TRADE POLICY AND THE GLOBAL COLD CHAIN

What happens when governments challenge free trade agreements?

The 2016 U.S. Presidential election reflected a resurgence of protectionist sentiment towards international trade and trade agreements.

During the campaign, then-Presidential candidate Donald Trump suggested the potential withdrawal from the North American Free Trade Agreement (NAFTA), eventually stating he would attempt renegotiations, and if renegotiations fail, then he would begin the withdrawal process. Similarly, both major party presidential candidates stated that they would not sign the Transatlantic-Pacific Partnership (TPP).

In April 2017, the International Monetary Fund (IMF) renewed its warnings against protectionism, citing nationalist political trends that threatened trade integration on both sides of the Atlantic.

IMF Managing Director Christine Lagarde called on member countries to avoid the lure of trade barriers while acknowledging differences with the Trump Administration over trade as the United Kingdom headed toward an exit from the European Union (EU).

"All countries, of course, should guard against what I have called self-inflicted wounds, such as restrictions, subsidies and other trade distortions that reduce competition and economic openness," she said.

The Impact of Politics

Natural and manmade disasters, armed conflicts, labor shortages, transportation inefficiencies, energy costs, industry consolidations – this is just the short list of factors that can impact the expansion of a nation's cold chain.

But the biggest barriers to cold chain growth, according to the U.S. Department of Commerce International Trade Administration (ITA),

Basal cold storage warehouses in Monterrey, Mexico. (Photos courtesy of Basal Storage and Logistics.)

remain government protectionist measures and non-tariff barriers. The difficulties and delays of clearing customs or transporting products across borders are a major impediment to services.

But what happens to local and global cold chains and the flow of trade when governments change their positions on free trade?

Cold in a Post-Brexit World

Brexit, the popular term for the withdrawal of the United Kingdom (UK) from the EU, became a reality in June 2016, when a bare majority of the voting electorate in the United Kingdom voted to leave the EU. In March 2017, the British government invoked Article 50 of the Treaty on the European Union, setting the United Kingdom on course to leave the EU in March 2019.

What will the cold chain look like in a post-Brexit Europe, when the EU is the source of 70 percent of the United Kingdom's food imports and 60 percent of its exports?

"Farmers, growers, manufacturers, and traders across Europe will want to continue to trade as the United Kingdom is such a large customer, the question is how to come to terms with border controls and bureaucracy," notes Chris Sturman, Chief Executive at the UK-based Food Storage and Distribution Federation (FSDF). "The impact on the supply chain of added inventory, processing and production delay and loss of shelf life will likely increase purchase prices to consumers and pose a greater risk to food chain resilience. Delay and uncertainty costs money and damages supply chain resilience, product availability, and consumer choice."

"Besides changing consumption volume due to changing prices and a potentially weakening British pound, supply chains may change because of where products are produced," observes Paul Bosch, Food and Agriculture Supply Chain Analyst with Rabobank, based in The Netherlands. "In the United Kingdom, imported food from the EU might be replaced either by domestic production or non-EU supplies. For cold chain operators supporting pre-production logistics – farmers and processors – they may see more significant changes to volumes."

Bosch contends that more local storage and transport could be required if UK farmers expand production in response to higher prices. To avoid potential import tariffs, food manufacturers that currently supply the United Kingdom from the EU might move production to the United Kingdom. In addition, cold chain operators may see some new trade routes emerge as non-EU suppliers may become more competitive, especially if no deal on trade is negotiated between the EU and the United Kingdom.

"It is important to realize that for both the United Kingdom and the EU, for a lot of products, there are no alternative suppliers or destinations," Bosch points out. "The limited shelf life of fresh produce reduces the attractiveness of alternative, faraway destinations, and some products can only be produced in certain regions, It should also be noted that expansion of domestic production, such as certain vegetables, can only replace imports to a limited extent."

Sturman notes that UK exports are currently booming as the value of the pound remains discounted against other major currencies. He adds that the United Kingdom is exporting food around the world, using systems compliant with the World Trade Organization that are already in position or – in the case of the UK's new Customs Declaration System – will be up and running by March 2019.

"The key will be the need to demonstrate strict and proven adherence to EU food standards and labeling, something we have not had to do as EU Single Market members, so border delays are likely unless a suitable efficient methodology for demonstrating compliance is installed and policed," Sturman says.

Sturman suggests that if post-Brexit border control arrangements mean that there is a hard border with no trade agreements with the EU, there will be a massive increase in vehicles that need to be checked, causing huge delays at ports and potentially leading to trucks queuing for 100 miles on both sides of the English Channel just to reach the ports.

"It is not a cliff edge on our side of the channel – it is more of a canyon," Sturman admits. "But, if the new Customs Declaration System is up and working on day one and there is an agreement between the EU and the United Kingdom to implement a frictionless border, then we should avoid these catastrophic delays, so long as unnecessary and dogmatic bureaucracy can be avoided."

Sturman notes that any delay in the food chain is a risk to food resilience.

Basal cold storage warehouses in Monterrey, Mexico. (Photos courtesy of Basal Storage and Logistics.)

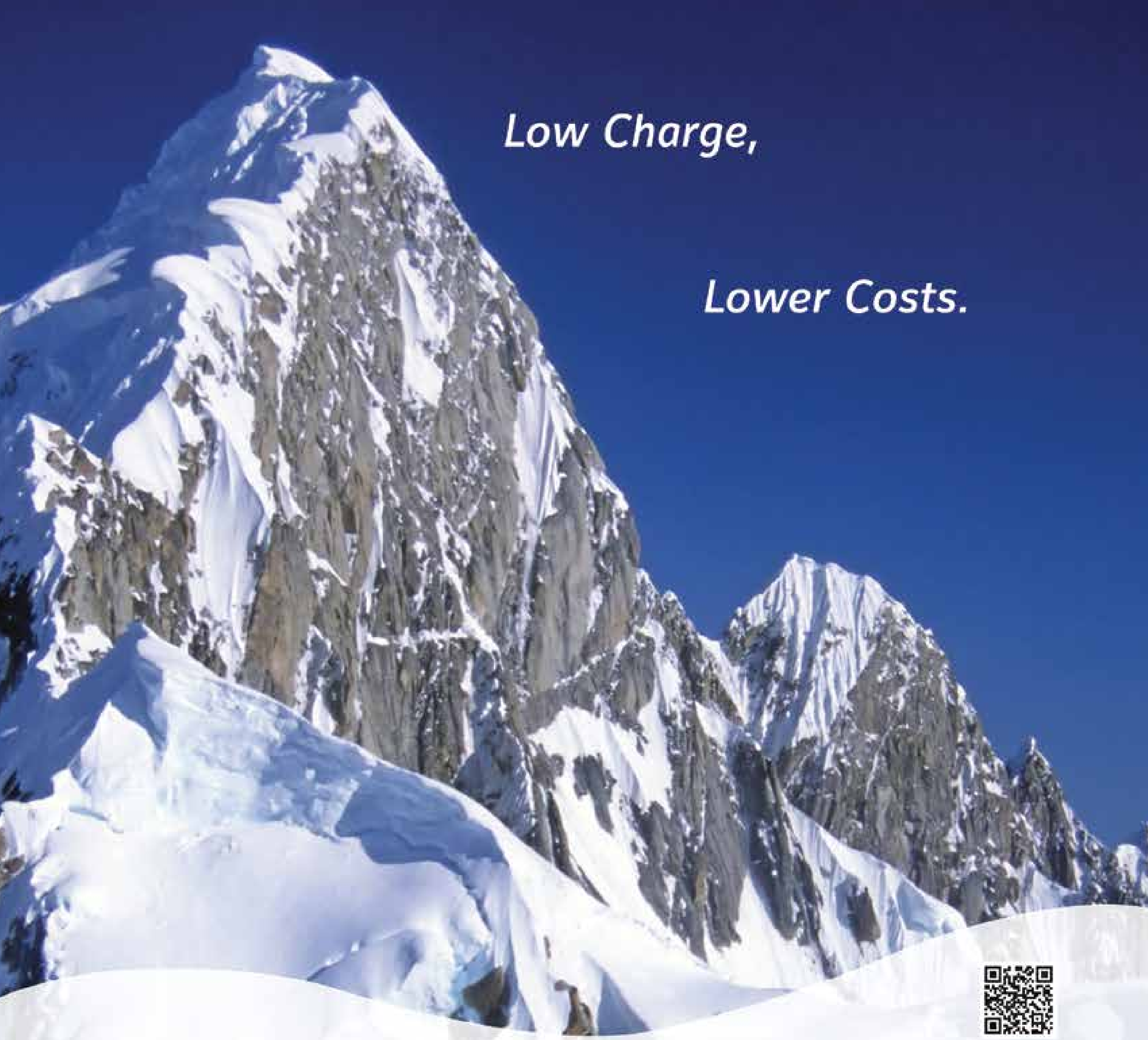
"We work in a world of just-in-time deliveries and minimal stock holdings and recent academic research indicates that there are just six meals in the UK food supply chain – three days supply," Sturman acknowledges. "The role of our organization, FSDF, is to highlight the risks and ensure that any such additional bureaucracy at the border is minimized to ensure that the UK food supply is uninterrupted and that food quality and hygiene in not compromised by further lead times within the supply chain. This is particularly influenced by existing EU regulations pertaining to sell by, use by, and best-before dates, which will still be aligned on both sides of the border."

So how should food logistics professionals plan to mitigate the risks and maximize the opportunities presented by Brexit?

Bosch maintains that logistics providers should first have an idea of which of the products they handle could be impacted.

"The two most important parameters are the potential price change, as it will impact volumes, and the product's potential alternative suppliers, as it will affect their customer base," Bosch reasons. "I urge logistics providers to discuss these risks with clients, as making predictions can be complex. For instance, premium products in general may be less vulnerable to price increases induced by tariffs or a weakening pound, but, in the case of wines for example, there are many alternative suppliers beyond France, Spain, and Italy. Even more complex is the case with seafood, where perhaps the biggest uncertainty is what happens to fishing rights."

Bosch contends that last but not least, logistics providers should not only focus on risks, but also on new opportunities coming from Brexit.



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"Food logistics professionals across the whole food supply chain, from supplier to consumer, are considering carefully all the potential risks and using their trade associations or direct lobbying to ensure that politicians and the negotiating teams on both sides of the Channel are fully aware of the threats to food resilience," Sturman says. "At the same time, they are looking closely at their existing supply chain structures in collaboration with their suppliers and intermediaries with a focus on information technology, potential new customs clearance systems, and the potential for paperless transactions to smooth the way for consignments and avoidance of unnecessary delays."

Uncertain Future for NAFTA

NAFTA is a treaty between Canada, Mexico and the United States, making NAFTA the world's largest free trade agreement. The gross domestic product of its three members is more than $20 trillion.

Since the pact came into effect in 1994, United States trade with Mexico and Canada has more than tripled, growing more rapidly than American trade with the rest of the world. Mexico and Canada are now the second and third largest exporters to the United States, after China. And the two countries are the leading importers of American products.

In May 2017, President Donald Trump sent a letter to Congress announcing the intent to renegotiate NAFTA. President Trump has criticized NAFTA for creating an unfair playing field, allowing Mexico to steal jobs from the United States and opening the border to cheap, tariff-free goods.

Over the past quarter century, NAFTA has reshaped the economy of the three member countries, and its demise could raise costs for companies and consumers.

Under NAFTA, the three countries pay nothing on most goods that cross the border. If the United States exits the pact, the tariffs, or taxes, that Canada and Mexico put on its goods would rise. For some goods, tariffs could go as high as 150 percent. That would cause prices to spike and cut into company profits.

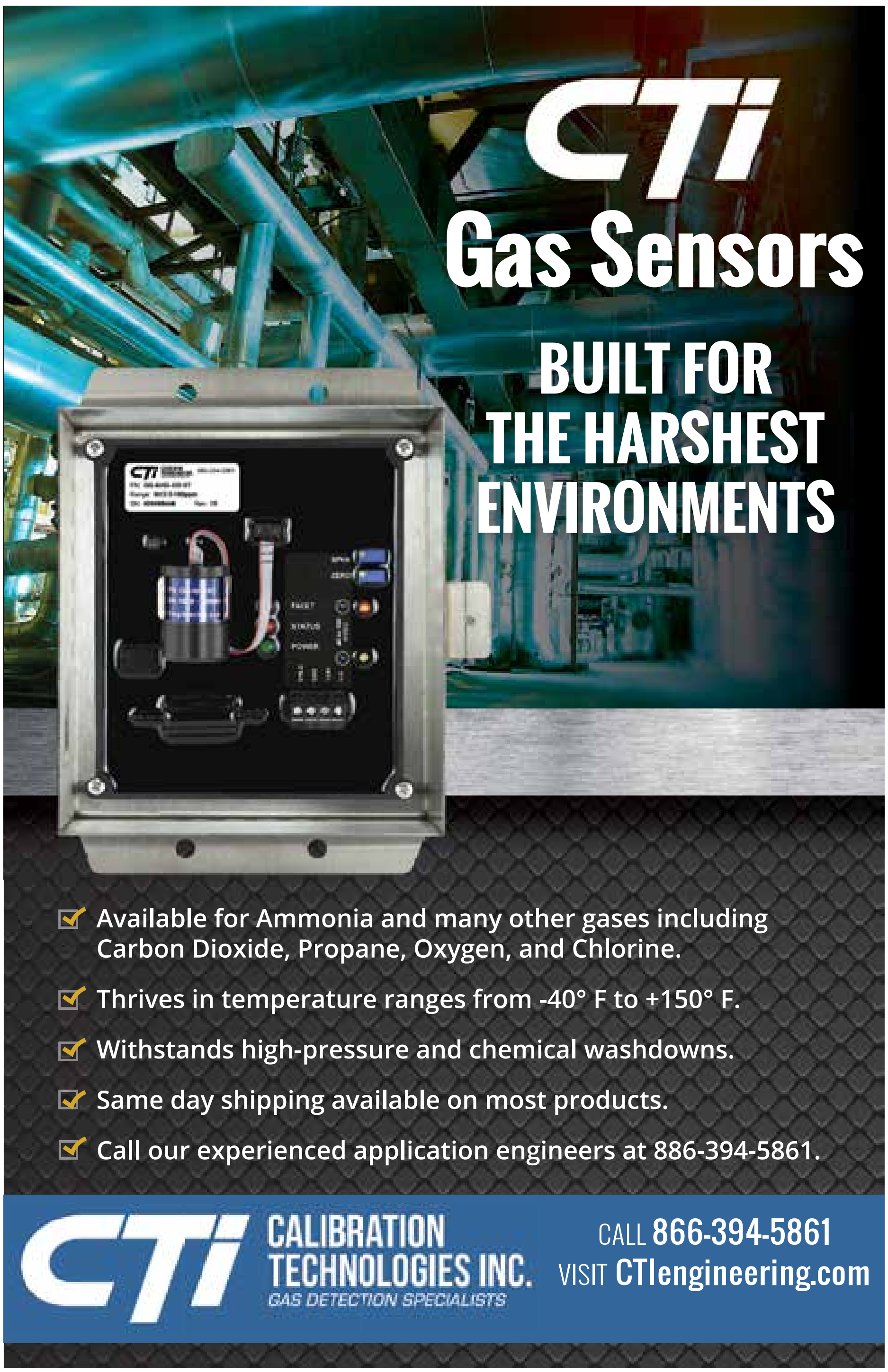
Companies have spent decades building up complex supply chains that snake across North America's borders to take advantage of differing costs and resources.

NAFTA opened major markets to United States farmers, and American corn now is sold in Mexico, a market it was previously excluded from. Mexican avocados, tomatoes and other fresh fruits and vegetables are now commonly found in United States grocery stores, especially during the winter growing season.

"The growth in sales for Mexican perishable products has more than doubled during the past 10 years, and exports of all types of fruits and vegetables have also grown significantly," says Mauricio Barrera, President of Basal Storage and Logistics, headquartered in Monterrey, Mexico. "NAFTA has 'opened the eyes' of Mexican companies that they can export to anywhere in the world."

Barrera contends that as unemployment continues to decline and the economy improve, Mexicans will increasingly buy cold storage products.

If the United States pulls out of NAFTA, perishable exports would be a little bit slower but this would not have a major impact on the Mexican cold chain, Barrera says.



"From my experience, 90 percent of exports are refrigerated fruits and vegetables, and those products hardly use any cold storage infrastructure outside the exporters' packaging plants as they are in a hurry to get these products to their destination," Barrera says. "On the import side, that's where the Mexican cold storage chain is required because there are a lot of imported frozen products."

Anticipating the possibility that the United States could pull out of NAFTA, Barrera says Mexican importers are looking for new suppliers. "What I have noticed is that most Mexican companies have started to try new suppliers and buyers of products outside of the United States. Products are already starting to come from different countries, and that would be a boon for Mexican ports, which by the way would require investments in cold storage facilities."

Barrera reports that Mexico is looking for new import suppliers from South America – especially poultry and fresh products from Brazil and Chile. On the export side, Mexico is developing trading partnerships with companies in South America, Europe, and Asia.

Within his own company, Barrera says they are evaluating plans for their dry storage division, which could get smaller if NAFTA is cancelled.

Barrera, however, remains optimistic about NAFTA. "If a fair trade agreement for both countries is reached, both countries will continue to benefit from it. There are a lot of good things about having a well-negotiated NAFTA with your next-door neighbor."

As reported in "NAFTA 2.0 – What to Expect?" in the November/December 2017 issue of *Cold Facts*, the stakes for a successful renegotiation are high for members of the cold chain industry in all three countries. Free and unfettered movement of food and agricultural products in the NAFTA region will drive business opportunities for GCCA members across the region. GCCA will continue to closely monitor the negotiations and remain actively engaged with partners across government and industry with hopes of a successful NAFTA 2.0 at the end of the process.

ALEXANDRA WALSH is a Senior Publishing Consultant with Association Vision and Managing Editor of COLD FACTS.

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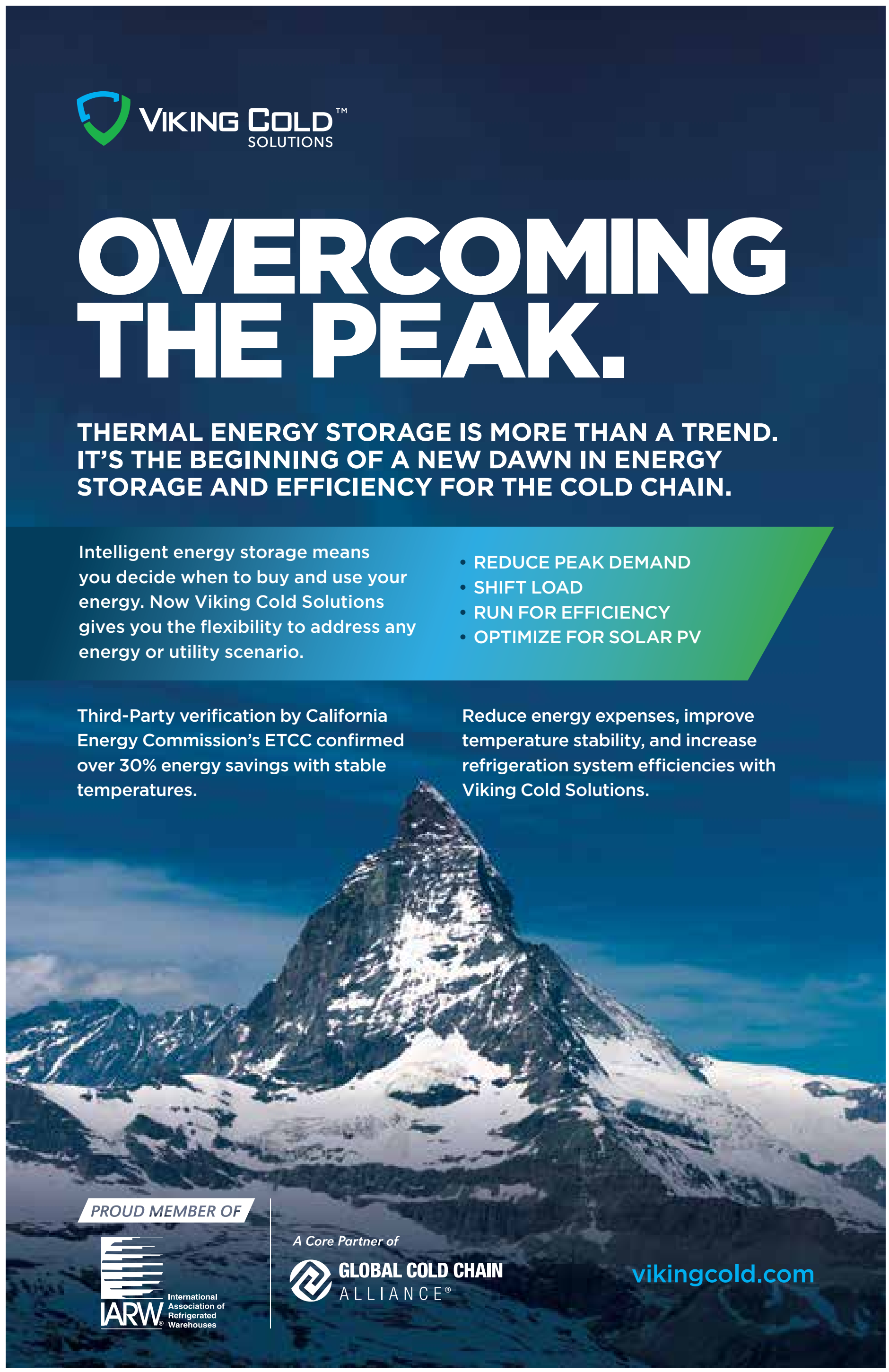
Free and unfettered movement of food and agricultural products in the NAFTA region will drive business opportunities for GCCA members across the region.



PRIMUS

BEATS MOTHER NATURE AND WINS "BUILT BY THE BEST" AWARD

Primus earns top honors in IACSC competition; Tippmann also recognized as a finalist for modernizing a mid-century facility.

By Sheryl S. Jackson

Weather is an ever-present challenge for construction, but most contractors do not have to deal with two major storms during the construction of one facility.

Not only did a tropical storm and a hurricane hit the Charleston, South Carolina, area as Primus Builders was constructing a 180,000 square-foot, greenfield cold storage distribution facility for Lineage Logistics, but overall, it was an unusually wet period of time with record-breaking rains and storms, says Jim Romine, Senior Director of Engineering for Lineage Logistics. "The entire team working on the facility handled the adversity well."

After Tropical Storm Erika dumped seven inches of rain on the jobsite, the building pad was submerged under water and surrounded by 12 inches of mud. "The ground couldn't hold the building," says Rich O'Connell, Chief Executive Officer of Primus Builders. Backhoes were used to remove the mud and replace it with dry material – a tricky process because there were already panels and columns in place, he adds.

When Hurricane Joaquin hit the area several weeks later, the team set up eight pumps around the building to drain the 18 inches of rain that the storm brought and to protect the work. "To ensure that we would meet

Far Left: Primus Builders, Inc. was named the winner of the 2017 IACSC Built by the Best Award competition for a project the company completed for Lineage Logistics. The award was given at the 37th IACSC Conference & Expo. Pictured left to right: Former IACSC Chairman Brian King (A M King), Michael Jones (Primus Builders, Inc.), Jim Romine (Lineage Logistics), and Corey Rosenbusch (IACSC-GCCA).

Engine room, Lineage Logistics, Charleston, North Carolina. (Photo courtesy of Primus Builders.)

PRIMUS BUILDERS, INC.

our schedule, we began working seven days a week," O'Connell says. Workdays began at 3 a.m. and ended at 8 p.m. and an additional superintendent was added to the job, he says.

In recognition for this project they completed for Lineage Logistics, Primus Builders, Inc. was named the winner of the 2017 International Association for Cold Storage Construction (IACSC) Built by the Best Award. The award was given on November 3, 2017, during a general session at the 37th IACSC Conference & Expo following a presentation on the project by Primus and Lineage representatives. Eleven supplier companies also contributed to the success of this winning project, and short profiles of each of them are shown in this article.

Beyond the weather challenges, Primus was also able to overcome the challenge that building a LEED-certified project for the cold storage industry also brings.

"We always try to build the most energy-efficient and sustainable buildings possible," says Romine. "With this building, we wanted to pursue LEED Silver certification as a goal because sustainability is important to our company and to our customers."

Working with IACSC, Primus presented the U.S. Green Building Council with a request for a scorecard change that takes the unique features of a cold storage facility into account. Because the LEED scorecard was developed for commercial and office spaces that do not rely on large-scale refrigeration and freezer systems to support operations, there was no energy baseline that accounted for refrigeration equipment, which limited the number of points that could be earned.

Indoor air quality performance standards also present a challenge because they require introduction of fresh air, which is not feasible in a refrigerated warehouse, explains O'Connell. "We were allowed to use an alternate method for indoor air sampling, which enabled us to gain points," he says. "This project was the first to be approved with the new parameters, which is important for the industry because it means that there is now a set of USGBC standards that can be met by members of the cold storage industry."

The Charleston project earned 53 points to secure LEED Silver certification. Specific points earned include Optimized Energy Performance and Water Use Reduction, which were awarded for a 31.6 percent and a 42.8 percent reduction, respectively.

The water use reduction was primarily achieved through low flow plumbing fixtures and water efficient landscaping. Energy savings were achieved by:

- Ammonia compressors that use thermosiphon oil cooling instead of liquid injection with thermal expansion valves.
- Oversized condensers that are more efficient than the IACSC baseline.
- Condenser fan upgrades from cycling to speed-controlled with variable frequency drives.
- Oversized evaporators that are more efficient than the IACSC baseline.
- Storage freezer evaporator fan controls upgrades from cycling to speed-controlled with VFDs.

Exterior of Lineage Logistics, Charleston, North Carolina.

The IACSC Built By the Best Award acknowledges industry-changing innovations and projects that exceed customers' expectations, positively impact and grow the cold chain worldwide, and contribute to the larger society through food safety, trade development, and job creation.

- Trim compressor upgrades to VFD to control capacity.
- Cold storage lighting system that includes efficient fixtures and motion sensors.
- Ammonia compressor upgrade to a flash gas economizer.

Other innovations in the warehouse include a 65-foot high blast freezer that incorporates insulated metal panels and a CO2 cascade refrigeration system. "We had not used the cascade refrigeration system in any of our facilities before, but it has turned out to be a good and efficient system for us," Romine says.

The insulated panels required for the blast freezer ensure that the working temperature of -20 degrees is accurately maintained, but the height of the space – 65 feet – presented a challenge because insulated metal panels that tall do not exist, O'Connell points out.

"We installed panels one on top of each other using stack joints," he explains. Precision was necessary because any vapor leaks could cause damage to products in the freezer. "Primus is very familiar with warehouses and freezers in excess of 65 feet so we have used this approach before," he adds.

Air-flow technology that pulls cold air through the product cases results in chilled air hitting the product on the top, bottom and sides of cases. Not only does this freeze product faster, but high-static plenum fans produce higher suction pressures, which reduce energy costs, O'Connell explains.

Although the trend in cold storage has been a move to less depth on racking, an automated pallet mole system that provides 20-deep radio shuttle racking was selected for the facility, says Romine.

"We tested the system on a smaller scale in another facility before committing to it for the new facility," he notes. "The product flows through to the dockside of the warehouse, which has improved productivity."

Primus superintendents worked closely with the racking vendor to ensure the site was properly prepared for installation and that the pallet moles were properly installed.

New construction offers options that renovation of existing facilities does not provide, so the design and innovative features incorporated into the Charleston cold storage warehouse were designed for today and the future, Romine says. "You only get one chance to design and build the initial warehouse, but we incorporated technology and design that will allow us to integrate new technology and add more capabilities in the future."

Award-Winning Supplier Profiles

Several suppliers that were integral to the success of this winning project are profiled here.

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Project Profile: Lineage Logistics, Charleston

Construction (IACSC) "Built by the Best Award" is a Charleston, South Carolina, Lineage Logistics facility that serves as a regional import/export hub for protein products destined for domestic and international markets. The facility features the newest high-capacity blast freezing technology and offers road and rail access via a Norfolk Southern rail line as well as immediate ship access to the Port of Charleston.

The facility is capable of loading or unloading up to 100 trucks per day and can store 50 million pounds of product. Among the cold cargo moving through the port is poultry headed to Asia, beef brought in from Australia and citrus headed for France. Additional warehouse features include:

- Convertible freezers with temperatures ranging from -10°F to 35°F
- Shipping, receiving and rail/cross docks maintained at 35°F
- 30 dock doors and four rail doors
- USDA inspection room requiring extraordinary cleanliness
- Opportunity battery charging
- Maintenance shop
- Railcar loading/unloading
- Transloading services
- Custom labeling and stamping

Interior rack, Lineage Logistics, Charleston, North Carolina. (Photo courtesy of Primus Builders.)

Interior dock, Lineage Logistics, Charleston, North Carolina. (Photos courtesy of Primus Builders.)

The IACSC Built by the Best Award was created in 2016 to recognize members of IACSC, a Core Partner of the Global Cold Chain Alliance (GCCA), as the world's leading experts in building temperature-controlled facilities of all types. Construction companies submitting projects to compete for the award must be IACSC members and be available to present alongside their customer at the annual IACSC Conference & Expo.

The award acknowledges industry-changing innovations and projects that exceed customers' expectations, positively impact and grow the cold chain worldwide, and contribute to the larger society through food safety, trade development, and job creation. The IACSC award also recognizes project teams that move the industry forward in regards to the design and construction of temperature-controlled facilities.

The IACSC Built by the Best Award was created in 2016 to recognize members of IACSC, a Core Partner of the Global Cold Chain Alliance, as the world's leading experts in building temperature-controlled facilities of all types.

"Built by the Best" Honorable Mention

The following companies received Honorable Mention for their projects:

- Clayco for its project with Schnuck's Markets
- Burch Corporation for its project with South Georgia Pecan Company
- Fisher Construction Group for its project with Lamb Weston

Exterior dock, Merchandise Warehouse, Indianapolis, Indiana. (Photo courtesy of Tippmann Innovation.)

IACSC BUILT BY THE BEST AWARD FINALIST
TIPPMANN INNOVATION:
A 1950s FACILITY UPGRADED TO INCLUDE MODERN FREEZER SPACE

When Merchandise Warehouse opted to demolish part of an existing warehouse that housed dry goods to expand its cold storage operation to include new freezer space, Tippmann Innovation was up to the challenge – including the fact that the remainder of the facility continued operating throughout construction.

In recognition of these efforts, Tippmann was recognized as the finalist in the IACSC "Built by the Best" Award competition.

"We demolished about 90,000 square feet of the existing warehouse, which was built in the 1950s, and replaced it with 100,000 square feet of freezer space – which represents about one-fourth of the total facility," explains Sam Tippmann, President of Tippmann Innovation. Due to the age of the facility, the existing warehouse roof did contain asbestos, which required an asbestos removal specialist to handle the removal, but temporary walls were built to separate and protect the operational side of the business.

One surprise related to the age of the original building was the discovery that the entire building was built on a foundation of foundry sand, says Tim Siddiq, President and CEO of Merchandise Warehouse. "Tippmann Innovation had to dig 20 feet under the sand, remove the material and replace it with good construction fill. About 1,200 truckloads of sand were removed."

Matching the new section of the building to the existing building did involve a difference in roof lines, but there is also a different fire protection system – the existing building has a traditional fire protection system with water sprinklers. "Because water in a freezer is not a good option, we obtained a fire protection variance for the freezer operation," Tippmann says. "We demonstrated to the state fire commission that it is safer to increase ingress and egress, and to enhance fire notification systems with extra alarms and lights to evacuate the area, and let the fire department extinguish a fire."

An important factor in their success in obtaining a variance was the installation of heat and smoke vents in the freezer building. "Currently, there are no commercially available smoke and heat vents designed for freezers," Tippmann explains. "Existing vents are not vapor-tight so we worked with the manufacturer to modify the current design to adapt it to freezer conditions and to still meet the fire commission's requirements."

TIPPMANN INNOVATION

This was the first time Tippmann had to adapt heat and smoke vents for freezers, but it is a strategy that he will potentially use in the future in similar situations. In addition to fire protection that works in freezer conditions, there was an added financial bonus, says Siddiq. "We saved about $800,000 on the installation of a traditional fire protection system. We also changed our racking system after construction began to take advantage of the productivity gains of a radio shuttle system."

The switch to high-density racking did require a change of evaporators from aisle hung to penthouse installations, but the change was made with no delays in the construction schedule.

"Automation was used to reduce energy consumption, equipment needs and labor in the freezer," Tippmann says. "The pass-through design works well with Merchandise's traffic in the large freezer that is mostly dedicated to one end-user," he adds. Several innovative features included in the project are:

- QF+ In-Rack Freezing technology that takes the place of conditional blast freezing while freezing palletized product up to four times faster while also reducing handing time.
- A state-of-the-art de-space room that allows for rapid removal of pallet spacers and quick shrink wrapping for end storage in the HDR section of the warehouse.

The efficiency that the de-space room created allowed Merchandise Warehouse to re-purpose four full-time employees to other areas of their operation. “The de-space room includes nearly fully automated function of pallet tilting for simple removal of pallet spacers and skid shrink wrapping prior to the skid being put onto the conveyor to go into the racking,” Tippmann says.

“Also, the new HDR racking system includes a radio shuttle design for quick storage and removal of palletized product. The pass thru door design with conveyors yielded a savings of over 40TR (tons refrigeration).”

Left to right: Sam Tippmann [Tippmann Innovation], Rob Adams [Tippmann Innovation], and Tim Siddiq [Merchandise Warehouse Co., Inc.] of the finalist team describing the project at the IACSC Conference & Expo.

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High-density racking and 2-deep select racking, Merchandise Warehouse, Indianapolis, Indiana. (Photo courtesy of Tippmann Innovation.)

The biggest challenge of a large demolition and rebuild project in which part of the facility continues operations is communication, Tippmann notes.

"Our operations people met daily with representatives of Merchandise Warehouse to review the areas in which we were working and coordinate times to gain access to areas in the existing building," he explains. "We did work after hours and weekends, when Merchandise Warehouse could reschedule work to allow us access without impeding operations."

Overall, the project was a success, concludes Siddiq. "Tippmann Innovation helped us with new thinking – beyond the scope of our original parameters – and was able to design a building with 25 percent more pallet positions, which is good for our customers."

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Port of Long Beach, California.
(Photo courtesy of Karen Thuermer.)

BEST PRACTICES IN TRANSPORTATION

Top issues include driver shortages, collaboration and transparency, flexibility and temperature monitoring.

By Karen E. Thuermer

Ever since British fishermen began using ice in the 1700s to preserve their catch while at sea, best practices for cold chain shipments have been key to managing the challenges of transporting temperature-sensitive goods.

With the global market for cold chain products expanding rapidly, transportation options are quickly evolving along with best practices to manage them. Here's what industry experts see as key issues impacting each mode and best practices for smoothing out rough edges.

Trucking

Trucking is key to cold chain shipments, but as Matt Luckas, Vice President of Supply Chain Services for Hanson Logistics, says, for asset-based companies and those that purchase trucking services, capacity and a severe shortage of truck drivers is the "elephant in the room." It's even impacting best practices.

"Driver shortages across the board are impacting all facets of trucking," Luckas says.

He explains that people in his company make a concerted effort to call new carriers every week to see if they can find trucks. This includes signing up with a firm that helps place military personnel who are about to be discharged into the civilian workforce to see if they can find both warehousing and truck operators. "We visited three different truck driving schools, which in the past, would be unheard of," he adds.

In this business climate, trucking companies are going to great lengths to retain drivers. This includes bumping up signing bonuses to $15,000 to attract drivers.

Training is critical in finding and hiring good drivers. Major carriers have their own driving schools. "I think today best practices surround trying to retain your best drivers," he believes. "Think Captain Obvious."

The industry also faces government regulations such as the Food Safety Modernization Act (FSMA) that now requires training regarding food safety.

"FDA is providing training and there are companies that will provide training and documentation," Luckas says.

Add to this the December 18, 2017 mandate under the Federal Motor Carrier Safety Administration (FMCSA) that requires truck operators to use electronic logging devices (ELDs) to keep records of duty status.

ELDs are intended to help create a safer work environment for drivers, and make it easier and faster to accurately track, manage, and share records of duty status (RODS) data. An ELD synchronizes with a vehicle engine to automatically record driving time, for easier, more accurate hours of service (HOS) recording. The rule provides a phased implementation timeline to give drivers and carriers time to comply.

"It's just one more thing for an industry that is already hurting for employees," he says.

Intermodal Rail

Given escalating challenges facing the trucking industry, the future for intermodal rail appears bright. Theodore Prince, Executive Vice President and Chief Operating Officer of Tiger Cool Express LLC, believes the industry is experiencing a sea change.

"A dramatic boom in intermodal began in September 2017," says Prince. "Now we are looking at a historic inflection point in our business. When we look back at innovations such as doublestack rail, the 53-foot trailer, and the impact of deregulation, we will be specifically talking about how surface truckload was before and after the December 2017 ELD mandate."

In intermodal's favor is its low-cost structure. "Intermodal can handle freight surges, offers assured capacity, and doesn't have to follow the sun,'" he says. "Today we clearly believe intermodal is ready for its close-up."

But there are issues. Intermodal uses drayage for pickups and delivery. "Just as truck capacity is getting tight, so is drayage," he admits.

To fix the problem, Prince maintains that customers have to change their practices related to a live load and unload. "This needs to be replaced with drop-and-hook," he says.

And this is where best practices come into play. More collaboration and visibility in the supply chain is needed. "It's a best practice that's been talked about for nearly a decade," Prince maintains. "If you are going to move a

The Hapag Lloyd steamship line operates a container fleet of more than one million 20-foot equivalent units. (Photo courtesy of Hapag Lloyd.)

shipment next Friday, let me know a week in advance so I can make sure I have a container, a drayman, and a gate reservation. We need to have an honest dialogue with our customers about what they need and when they need it, and they need to be as accurate as they can be."

Air

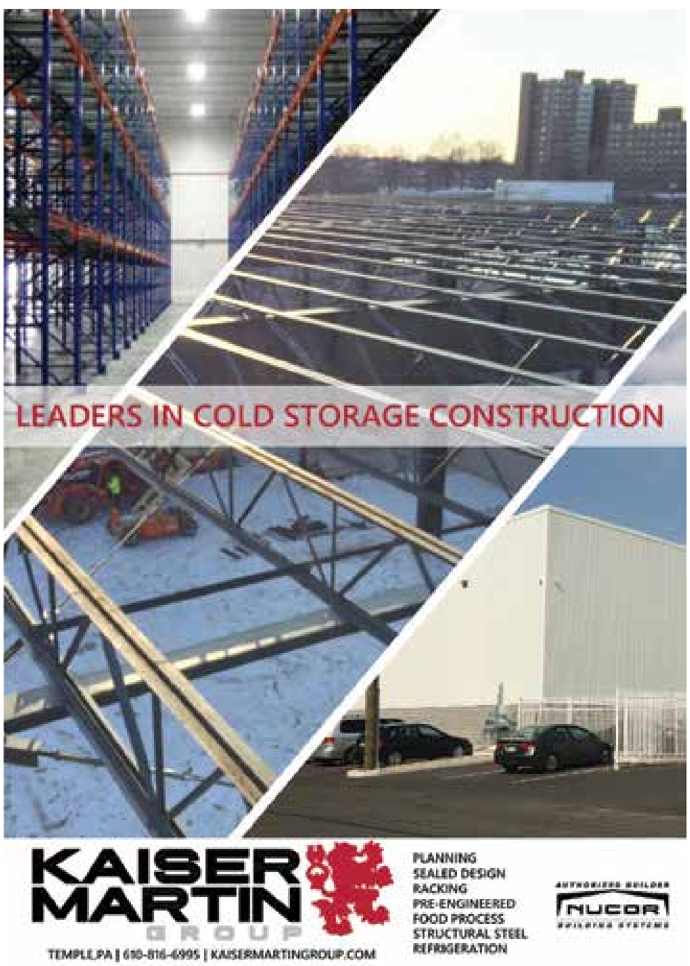
Perishables are a critical segment of the air cargo industry. Transporting perishables by air means the airline must be flexible to meet customer requirements. Think of a planned flight that needs to be postponed because a specific product's growing season is starting later due to weather conditions in the country of origin or because the customer will deliver a higher or lower amount of produce than anticipated.

"In that case, we might need to adapt our planning or find other freight as a replacement," says Uta Frank, Product Manager Fresh/td, Lufthansa Cargo.

Since Lufthansa Cargo offers both passenger and freight service on a large international network, Frank emphasizes that customers can plan their transport requirements well in advance. "We do charter business only on request and then according to customer needs, unlike sea freight shipments where containers need to be filled and may sit for days," Frank says.

Debbie Egerton, spokesperson for Delta Cargo, notes that Delta Airlines prioritizes and moves perishable backlogged freight as quickly as possible.

Consider the example of when a shipment is loaded into the belly of a passenger aircraft, but then the pilot orders several coolers pulled off to free up weight needed for extra fuel.



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"We cannot make any compromises," she says. "But in all other cases, we do have prescribed processes, such as bringing back the freight into an adequate storage area in case of a flight delay. We provide a predominantly temperature-controlled environment during flight and storage."

Delta, which operates only passenger planes, has a procedure in place for offloading cargo in this situation. "Since perishable products have a mid/high-tier loading priority, weight cuts for fuel typically do not impact these and other high-priority shipments," says Egerton.

Ocean

Advancements in refrigerated container technology being implemented by ocean carriers are making this transportation mode competitive with air freight.

"We deploy a growing fleet of Controlled Atmosphere ExtraFresh reefer to cater to the growing avocado and blueberry demand," reports Christian Denso, spokesman for Hapag Lloyd, based in Hamburg, Germany. "We connect the main export markets in South Africa, Peru, Chile, Mexico, Colombia, and Argentina with the consumer markets in Europe and Asia."

Refrigerated containers deployed by Hapag Lloyd control temperatures to as low as -40°C/-40°F and a variety of precise controlling alternatives for all special cargo requirements. This makes it possible for the steamship line to reliably transport a variety of perishable cargos. The steamship line operates a container fleet of more than one million twenty-foot equivalent units, including special equipment and one of the most modern refrigerated container fleets in the field.

To further increase quality of the cold chain in ocean shipping, Hapag-Lloyd offers reefer monitoring solutions such as cold treatment and controlled atmosphere for customers with sensitive or high-value products such as pharmaceuticals "We see a growing demand for reefers equipped with technology to monitor temperature and atmosphere," Denso says.

The real-time visibility allows Hapag-Lloyd to take preventive action before cargo can be damaged even if it is not under the carrier's own control but within a port or during pre/on-carriage.

"In addition, Hapag-Lloyd is engaged in various tests and trials to determine which concepts and future products can create additional value for our customers in the cold chain," he adds.

Careful servicing and inspections before every assignment are critical as are continual research projects to improve future generations of refrigerated containers.

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GCCA MARKET INTELLIGENCE TO **GROW YOUR BUSINESS**

The GCCA research strategy produces reports that provide essential data and insights to improve member operations.

By Alexandra Walsh

Whether investing in a new market or comparing industry benchmarks to their own company's performance, forward-thinking cold chain professionals use data to improve and grow their business.

The Global Cold Chain Alliance (GCCA) and its Core Partners study the cold chain industry to better understand the scope and needs of the industry. With this data, GCCA is able to identify areas where the cold chain needs to be strengthened and, subsequently, develop resources to help the industry do just that.

In addition, an important element of the IARW-WFLO Strategic Plan is to develop a market intelligence research program that provides the kind of information that will help both promote and grow the cold chain industry by using industry data and metrics to improve productivity and guide decision-making.

To achieve that, GCCA developed a research strategy that outlines requirements for any association research project including how, what, and when it conducts research projects, including industry surveys and external research projects. To ensure all research projects address members' current needs and concerns, a committee of members meets regularly to vet research proposals and review questionnaires and reports.

Moving into 2018, the alignment of key performance indicators (KPIs) across the industry is a major focus. While not knowing exactly what the research method will look like (for example, are all stakeholders convened in a focus group or is a survey conducted), the goal is to identify the top KPIs across the temperature-controlled 3PL industry and the food industry (retailers/processors) so that moving forward, members are focused on tracking and improving the areas their customers find important.

Productivity and Benchmarking Report

Since 2001, IARW has been collecting and compiling data to help temperature-controlled 3PLs evaluate their operations and performance. Now the benchmarking program offers an online platform for easy input of data and secure, customized analysis to benchmark warehouses against others in the industry.

The Productivity and Benchmarking Report (PBR) is a valuable tool used by members to evaluate their operational performance in comparison to other 3PLs in the industry.

Over the past few years, the PBR Task Force, comprised of representatives from seven of the leading temperature-controlled 3PLs in the industry, has worked diligently to improve the collection platform and survey content to ensure members are provided with the most comprehensive benchmarking data for assessing performance within our market. This survey is the only source for productivity benchmarking data for temperature-controlled 3PLs in the entire country.

As we prepare to launch the 2018 PBR Survey, the PBR Task Force needs your help. The data for the survey comes directly from the member organizations and the more participation from the industry, the richer the information reported.

The Task Force is asking for your commitment and participation in this important resource for the industry. Through the PBR survey, the productivity knowledge you provide will be combined with data from other 3PLs and shared with you to highlight valuable insights for your own organization. The Task Force's goal is to double industry participation and expand the content in 2018 and this cannot be done without your support. Please consider participating in the 2018 PBR survey and contributing to the advancement of our temperature-controlled 3PL industry and your own company.

Over the past few years, the PBR Task Force has worked to modify and improve the platform and survey content for the biennial PBR survey. Aside from improving and shortening the PBR survey, the PBR Taskforce has continually expanded and improved upon the KPI reporting and comparison opportunities for members to evaluate their performance against others in the industry.

Some of the results of the 2017 PBR are indicated in the infographic to the right.

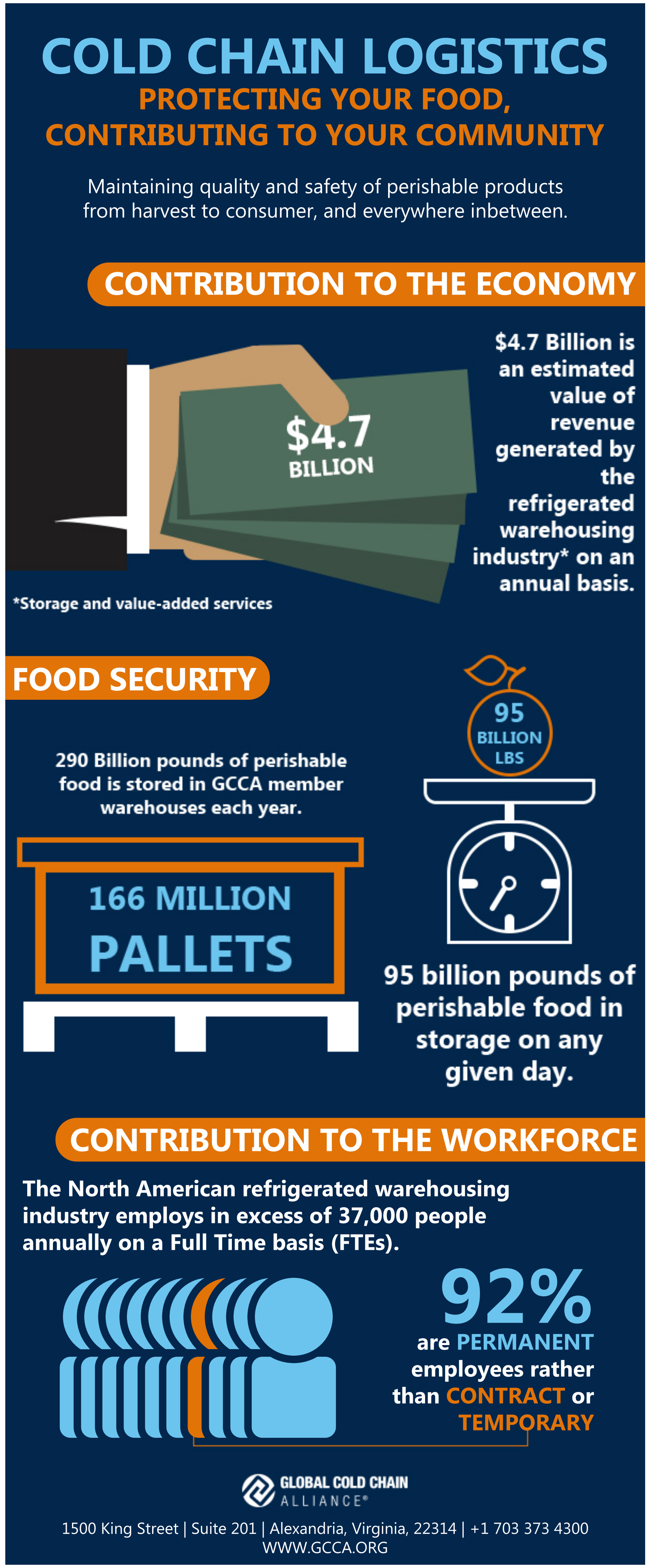
European Productivity & Benchmarking Report

Also included in the Strategic Plan is an initiative to expand the PBR to include other markets. GCCA identified key target markets and identified what information would be of the most value to those markets. The surveys will be developed so they can be scaled up and integrate with a larger global platform when ready. The results of the surveys will be used to educate operators in each market on the importance of operational best practices and benchmarking and to grow the industry and develop membership in these markets.

The first target market was Europe, and recently, GCCA released its 2016 European Productivity & Benchmarking Report (EPBR), providing statistics on the state of the cold storage market in Europe.

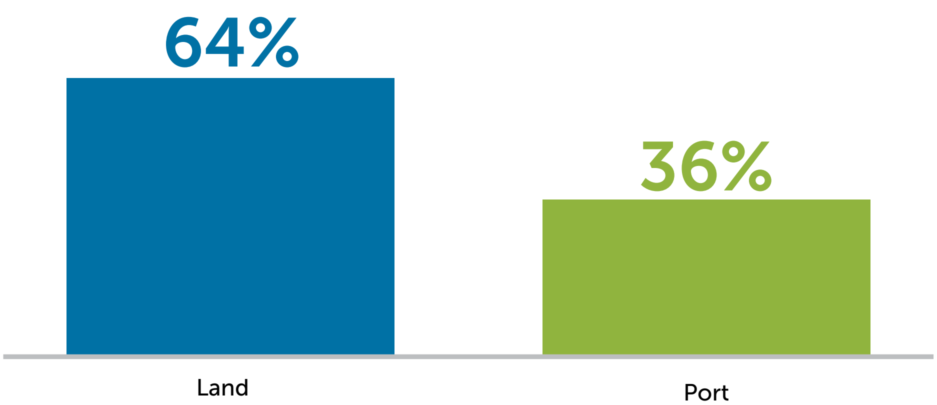
The report focuses on key areas of the temperature-controlled warehousing business, such as operational and financial analytics, enabling participating members to benchmark their own performance against that of the market average.

The EPBR reveals that the average age of warehouses in Europe was 29 years as of 2017. Their average capacity was 260,634 cubic meters in 2016, and the average number of pallet

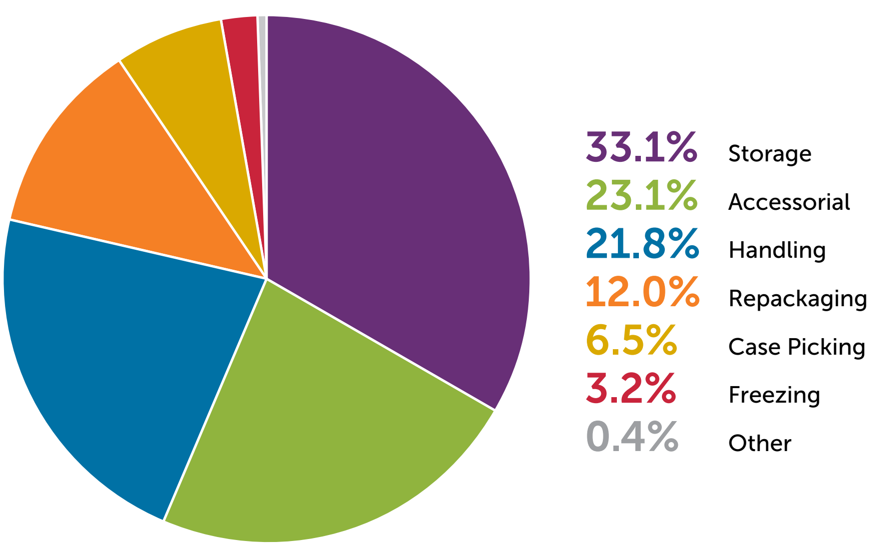


> We have found the PBR a valuable tool in evaluating our company performance against our peers in the industry."
>
> —TONY LUCARELLI
> *Executive Vice President, Sales & Marketing*
> *Henningsen Cold Storage Company*

WAREHOUSE LOCATIONS IN EUROPE



WAREHOUSE REVENUE BY ACTIVITY IN EUROPE



positions was 37,331. The average expenditure on contract workers represented a bit less than 50 percent of the total expenses for handling labor.

The charts on this page show the types of refrigerated warehouses in Europe and their revenue by activity in 2016.

The results presented in the report, including data such as various revenues and expenses per pallet, are designed to facilitate management of warehouses. Only participating members can access the full report free of charge as part of their membership benefits.

The 2017 EPBR will be conducted in February 2018. For inquiries about the European PBR, contact GCCA European Director Julie Hanson at jhanson@gcca.org.

Customer Research

GCCA has undertaken a year-long customer research study consisting of qualitative and quantitative phases. The qualitative phase launched in June 2016, with roundtable discussions with members' customers, primarily food processors. With the success of the first roundtable, GCCA decided to continue the qualitative research with cold chain users further along the supply chain and expanded the roundtable discussion to retailers -- the customers of food processors. A portion of the rich and detailed data and unfiltered comments from those latest roundtables was published in the November/December 2017 issue of *Cold Facts*.

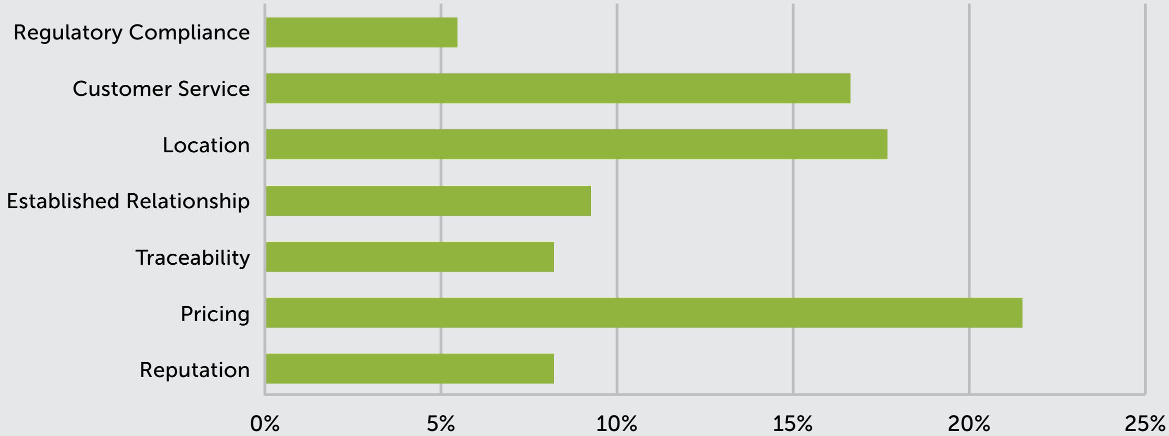
Now the quantitative phase of the customer research has concluded and is being compiled and analyzed. Key findings are highlighted below and additional details are provided in the charts on the next page.

- The top three factors out of 16 that customers consider in choosing a 3PL are pricing, location and service.
- The most common reason a customer ceases working with a 3PL is customer service issues followed by pricing.
- Customers anticipate that the top three trends to impact their companies during the next five years are in the areas of food safety and protecting the brand, operations, and regulations and compliance.

ALEXANDRA WALSH is a Senior Publishing Consultant with Association Vision and Managing Editor of COLD FACTS.

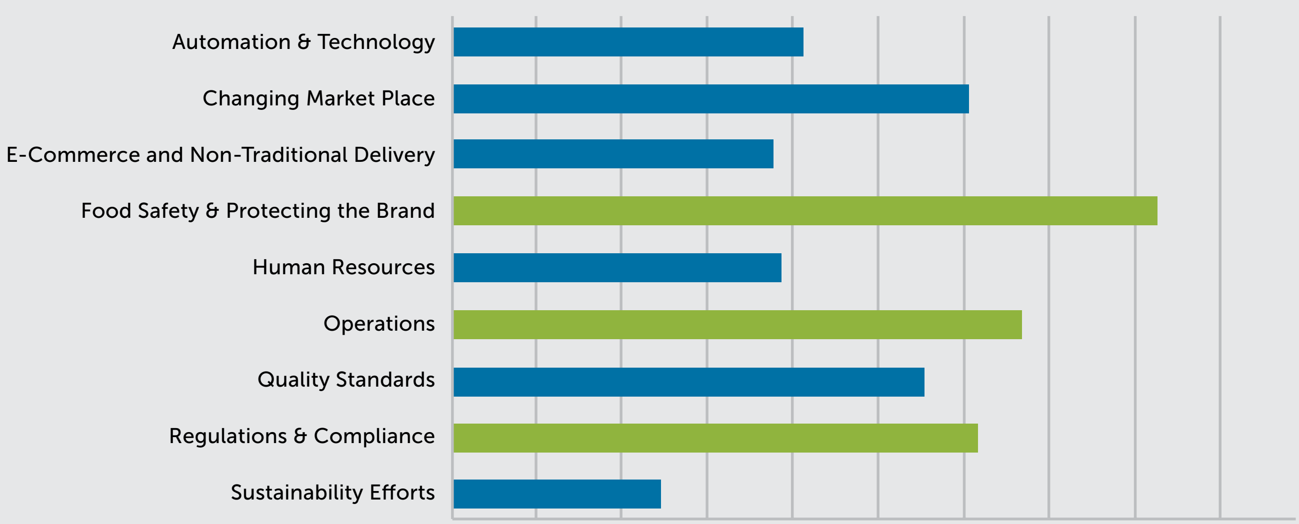
EMAIL: awalsh@associationvision.com

FACTORS IN SELECTING A 3PL PARTNER



MOST COMMON REASONS FOR CEASING WORK WITH A 3PL

BUSINESS TRENDS DURING THE NEXT FIVE YEARS



MEMBER NEWS

NEWS FROM MEMBERS OF GCCA CORE PARTNERS

A M KING is expanding an existing food distribution facility for ALDI, Inc. in Frederick, Maryland. The new cold storage distribution center will boost the discount grocer's existing perishables space, promoting growth of its available products and overall company growth. Construction is scheduled to be completed by February 2018.

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AMERICOLD broke ground on a new facility in Middleborough, Massachusetts, for its longtime partner Ocean Spray. The facility will support Ocean Spray's production requirements for its northeast harvesting operations, specifically for Craisins® dried cranberries.

• • •

ARCO DESIGN/BUILD completed Hutt Logistics and Hutt Trucking freezer expansions in Hudsonville, Michigan. With the addition of this space, Hutt has more than doubled its total deep-frozen storage capacity. The additional 81,000 square-foot freezer and cold dock allows for over 19,000 pallets at Hutt's facility and is expected to create 30 full-time jobs throughout the warehousing and trucking divisions of the company.

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CLOVERLEAF COLD STORAGE entered an agreement to recapitalize the company whereby private equity funds affiliated with Blackstone will make a majority equity investment into Cloverleaf alongside the existing family shareholders, who will continue to operate the business to support future growth in the company.

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ESI GROUP USA was awarded a Silver award in the General Construction – Industrial (over $3 million) category from the Associated Builders and Contractors Project of Distinction Program for its Des Moines Cold Storage Greenfield Distribution Facility.

HANSON LOGISTICS appointed Ken Whah Chief Operating Officer. This newly created position follows the retirement of Greg Hanson, with Andrew Janson appointed President and CEO. Whah comes to Hanson Logistics from Whirlpool Corporation, where he was most recently the Director of North American Logistics Operations.

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HEATCRAFT WORLDWIDE REFRIGERATION released the newest addition to its condensing unit product line, a low-temperature screw compressor condensing unit. As a complement to the existing medium and high temperature options, the new low-temperature addition fits well within the company's goal of providing the commercial and industrial refrigeration market with a comprehensive offering for large cooling applications.

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HENNINGSEN COLD STORAGE CO. plans to build a new 5-million cubic foot temperature-controlled warehouse to support the growing demand of customers in the Yakima Valley and Columbian Basin regions of Washington State. Construction is expected to be completed in summer 2018.

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JOHNSON CONTROLS-TYCO introduced a new addition to its Quell Fire Sprinkler System: The Ultra K-34 286-degree Sprinkler. Designed for a higher level of protection than standard spray sprinklers, it can eliminate the need for in-rack sprinklers and can provide ceiling-only protection for up to 55 feet. The highly predictable technology also offers a unique "surround and drown" approach to controlling a fire, as the right sprinklers can be opened regardless of where the fire starts.

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KPS GLOBAL® named Mike Eakins Chief Executive Officer. KPSG Vice Chair Jeff Clark, who has been serving as CEO, will continue to be heavily involved with the company.

MTC LOGISTICS appointed Jeff Carden, Mauricio Martinez, and Dan Poarch to the position of General Manager, and Garry Kvech to the position of Plant Manager. Each of the General Managers will manage MTC Logistics distribution centers. Carden will manage the center in Baltimore, Maryland; Martinez will manage the center in Jessup, Maryland; and Poarch will manage the center in New Castle, Delaware. Kvech will assist in the management of the Jessup distribution center. The company also appointed Dennis Rhodes to the position of Chief Information Officer.

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PRECISA FROZEN in Chile was visited by a delegation from the Certification and Accreditation Administration of the People's Republic of China as part of an application for certification for the export of meat to China.

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RLS opened its sixth facility, located in Salt Lake City, Utah. This new site expands direct-to-consumer fulfillment, cold storage, and transportation services. With the new addition and current east coast operations, RLS can now offer second-day ground shipping to 80 percent of the U.S. population.

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SNOTEMP achieved USDA Organic Certification as a storage facility after a compliance audit by Oregon Tilth. With this certification, SnoTemp can ensure that customer products are handled in accordance with USDA Organic Standards, maintaining organic integrity throughout the supply chain. The company was also awarded a 2017 Top Workplaces honor by The Oregonian.

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STELLAR named Clint Pyle as Senior Vice President/Chief Financial Officer. He succeeds Scott Witt, who has been promoted to the Stellar Board of Directors, where he will serve as Chair of the Finance Committee.

COOL SOLUTIONS

SCIENTIFIC ANSWERS TO COLD CHAIN CHALLENGES

This column highlights a cold chain question and answer submitted through the GCCA Inquiry Service to the team of experts on the WFLO Scientific Advisory Council (SAC).

Q: We are going to be freezing bread that will be delivered to our site. Is there a timeframe for freezing bread that would be coming in from 36-40 degrees? Is there a rule of thumb to use for determining the freeze time? Our freezer is typically set at -7 F.

A: The Food Freezing and Storage Calculator is available on the GCCA/WFLO website to provide this type of assistance. I used the calculator for your situation to obtain an estimate. I estimated the package size as 10" by 12" by 2." The time required to reduce the temperature of the bread in this package from 40 F to 0 F in -7 F cold air is 7.5 hours, if there is sufficient movement of the cold air over the surfaces of the package. If the air movement is limited, the time will increase to 15 hours. Obviously, air movement is critical in this process. I am unable to evaluate the configuration of the product packages in your freezing system, so the range of 7.5 to 15 hours is a first estimate. You should confirm the package size, but the influence will be much less than the cold air movement. I encourage you to try the calculator for these types of questions.

Many factors will influence time to freeze. From a picture I saw of the bread configuration on the plastic tray, that should provide a good opportunity for air movement around the product. Having the bags exposed (as opposed to having them packed in a corrugated carton) will also help to minimize the insulating factor of added materials.

Bread generally freezes fairly easily. However, there is one unique thing about freezing bread to keep in mind: Due to the morphology of the starch structure in the baked bread, it will go through the process of retrogradation over the storage time. This change is more commonly referred to as "staling." It is not the only condition changing in bread over time, but will significantly contribute to bread firming over the shelf life. This "staling" effect is highly sensitive to temperature and will occur most rapidly between 20 to 50° F (-7 to 10° C). It is therefore important to move it through this temperature zone as quickly as possible anytime you are freezing bread.

Similarly, as bread is thawed, it needs to again move through this temperature range quickly. If I read your original message correctly, it appears that you will be receiving bread between 36-40° F. From an overall quality standpoint, that is about the most unfavorable condition possible for bread storage. Perhaps that is not something that you have any control over. However, you should be aware that if bread is held for any significant time in that range, it is impacting the product quality that you may ultimately be responsible for to the end user.

Answers provided by the Scientific Advisory Council's Dr. Dennis Heldman from The Ohio State University and Brian Strouts, Bakery Specialist from AIB International. To contact the SAC regarding food storage/handling or logistics questions, post in the GCCA Online Community at community.gcca.org or email inquiry@gcca.org.

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Expertise: Food Safety, Food Safety Regulations

Kees Jan Roodbergen,
University of Groningen
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Dr. Vicky Salin,
Texas A&M University
Expertise: Agriculture Economics

Dr. S. Paul Singh,
Michigan State University
Expertise: Packaging, Package Labeling

Dr. Donald Schaffner, Rutgers, The State University of New Jersey
Expertise: Microbiology

Dr. Joseph Sebranek,
Iowa State University
Expertise: Meat Products

Dr. Charles White, Mississippi State University
Expertise: Dairy Products

Dr. Elhadi Yahia,
United Nations Food and Agriculture Organization, Cairo, Egypt
Expertise: Postharvest Technology of Perishable Foods

ASSOCIATION NEWS

NEWS ABOUT GCCA CORE PARTNERS

The newly updated **GCCA** Guide to Effective Warehouse Design, Maintenance, and Modernization provides engineers and operators of refrigerated warehouses with design, maintenance, and repair guidelines for all major structures in a refrigerated warehouse and the overall physical structure. The guide also offers advice and alternatives to upgrade and modernize the major elements of a refrigerated warehouse. This guide is one of many resources available to IACSC and IARW warehouse members to assist in designing and building cold storage facilities of the highest quality. Download the updated guide via the GCCA website.

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Two of the top minds in their respective fields have been announced as keynote presenters for the 127th **IARW-WFLO** Convention that will take place April 29 – May 2, 2018 in Amelia Island, Florida. Neil Jacobstein, an expert in artificial intelligence (AI) and robotics will open the Convention with a discussion on the technical, business, environmental and ethical implications of AI and robotics, as well as ways they will continue to transform the cold chain. As part of the closing general session, marketing guru Scott Stratten will examine the dynamics of marketing in a B2B environment and demonstrate how temperature-controlled logistics companies can stay in front of their partners and reach potential clients through unconventional marketing methods.

•••

Primus Builders, Inc. was named the winner of the 2017 **IACSC** Built by the Best Award for a project they completed for Lineage Logistics. The award was given on November 3, 2017 during a general session at the 37th IACSC Conference & Expo following a presentation on the project by Primus and Lineage representatives. The 180,000 square-foot greenfield cold storage distribution center in North Charleston, SC is a LEED Silver-certified facility and serves as a regional import/export hub for protein products destined for domestic and international markets. It features the newest high-capacity blast freezing technology and offers road and rail access (via a Norfolk Southern rail line) as well as immediate ship access to the Port of Charleston.

See the feature article about this award-winning project on page 16 of this issue of *Cold Facts.*

•••

The newly developed **IRTA** Driver Training program comes to fruition following the release of the IRTA Refrigerated Best Practices Guide, which provides a detailed overview of best practices for food safety in the temperature-controlled transportation sector. Available as a complimentary GCCA-IRTA member benefit, IRTA Driver Training includes an online video and training log for carriers to meet regulatory requirements for driver training. The 25-minute online video addresses six content areas, including: FDA Sanitary Transportation of Food (STF) Rule; sanitary best practices, risk management, training best practices, temperature control, and record-keeping.

NEW MEMBERS

NEW MEMBER COMPANIES OF GCCA CORE PARTNERS

IARW-WFLO WAREHOUSE MEMBERS

National Combined Group Real Estate Co.
Safat, Kuwait

Stellar Distributing
Madera, CA United States

IARW ASSOCIATE/SUPPLIER MEMBERS

Decco Worldwide Post-Harvest
Paterna, Valencia, Spain

InSite Real Estate, LLC
Oak Brook, IL United States

Online Energy Manager, LLC
Newtown Square, PA United States

WFLO MEMBER

Musanga Logistics
Lusaka, Zambia

IACSC CONTRACTOR & DESIGN/BUILD MEMBERS

Bethlehem Construction
Cashmere, WA United States

Cold Store Group of Saudi Arabia
Central Region Riyadh, Saudi Arabia

Ricker Thermline
Martinez, CA United States

IACSC ASSOCIATE/SUPPLIER MEMBERS

Aaron Bradley Dock Equipment (ABC Docks)
Franklin, TN United States

Infrisa Mexico Sapi de CV
Monterrey, Mexico

SNL Enterprises USA, Inc.
Prospect, KY United States

IRTA MEMBERS

Basin Logistics
Naperville, IL United States

Groupe Conhexa
Steenvoorde, France

National Combined Group Real Estate Co.
Safat, Kuwait

Stellar Distributing
Madera, CA United States

2018 CALENDAR

JANUARY 27-31, 2018
54TH WFLO Institute – East
Atlanta, Georgia, United States

FEBRUARY 18-23, 2018
2018 IIAR Industrial Refrigeration Workshop
Charlotte, North Carolina, United States

MARCH 3-7, 2018
54th WFLO Institute -- West
Los Angeles, California, United States

MARCH 14-16, 2018
21st GCCA European Chain Conference
Antwerp, Belgium

APRIL 29-MAY 2, 2018
127th IARW-WFLO Convention
Amelia Island, Florida, United States

JUNE 25-JUNE 27, 2018
2018 Global Cold Chain Expo
Chicago, Illinois, United States

JULY 29-AUGUST 1, 2018
2018 GCCA Assembly of Committees
Washington, D.C., United States

NOVEMBER 5-7, 2018
IACSC Conference & Expo
Las Vegas, Nevada, United States

*For more details go to **www.gcca.org/events**

PAUL CLAYTON
Senior Vice President for Export Services
U.S. Meat Export Federation

> Market access issues are the biggest deterrent to growing markets currently and in the future.”

CF: What are your thoughts on the current status of NAFTA negotiations and the potential impacts on the meat industry?

PAUL CLAYTON: Discussion among the United States, Mexico, and Canada is ongoing. Animal proteins have seen large benefits from the current NAFTA agreement so we hope the three governments can update the agreement, but it is essential that duty-free access for U.S. red meat exports to Mexico and Canada is maintained.

CF: What impact will the United States' withdrawal from TPP have on future meat exports?

PC: It is unfortunate the United States withdrew from the TPP as the Untied States would have received tariff reductions that would make U.S. beef and pork more competitive with competing exporting countries. Specifically, Japan has an economic partnership agreement (EPA) in place with Australia that has already lowered tariffs on imported Australian beef and an 11-member TPP could provide advantages for the Canadian, New Zealand, Mexican, and Chilean meat industries. The European Union is also close to finalizing an EPA with Japan. U.S. beef and pork also face high tariffs in Vietnam, which would have been phased out under TPP. We hope the U.S. government will pursue bilateral agreements with Japan and Vietnam, as well as other key trading partners.

CF: What are the most important emerging markets for U.S. meat exports?

PC: U.S. red meat has a large presence in Mexico, Canada, Japan, Korea, Taiwan, Hong Kong, China, and Egypt. We recently obtained new access for beef in Brazil and lamb in Guatemala, and U.S. pork exports to Argentina are set to resume soon. We are also seeking additional access in key Southeast Asian markets. The future looks promising for Sub-Saharan Africa, where the economic base improves with energy reserves and a growing middle class. The United States recently obtained access to South Africa, which is developing into a viable market, especially for beef livers.

CF: What are the biggest factors in the ability of the United States to maintain and grow meat exports over the next five years?

PC: Market access issues are the biggest deterrent to growing markets currently and in the future. Most of these issues are technically based and range from product labeling to the use of certain technologies at the production level and in the processing facilities.

The animal protein market is very competitive worldwide and creates some challenges for U.S. exports. The U.S. production and processing systems are very technically advanced and this allows the U.S. industry to provide economically priced, high-quality products to consumers all over the world. We promote the virtues of U.S. products in all markets, including food safety, nutrition, and eating quality. Our competitors follow similar marketing methods, but U.S. meat tends to be a premium product. We see some of our competitors use the “U.S. tools” such as genetic selection, concentrated feeding, and processing techniques to compete more effectively with the U.S. industry.

Global consumer attitudes and demands are ever-changing. We are seeing more use of social media to promote U.S. meat products. Not only is our promotional focus on meat quality, food safety, and nutrition, but we must also address other consumer-sensitive issues such as sustainability, animal welfare, clean labels, and identifying the origin of meat and livestock.

CF: What has been the biggest change during the past few years in how meat products are transported around the world?

PC: The biggest change is the sheer volume of product exported. From 2006 through 2016, we have seen more than 80 percent growth in beef, pork, and lamb exported. U.S. exports grew from 1.9 million metric tons to more than 3.5 million metric tons.

I also believe improvement in the cold chain is a one of the significant changes in the industry during the past few years. This is a critical issue from a food safety standpoint but also relative to product integrity and shelf life. Since we have meaningful growth in chilled beef, pork and lamb, managing the cold chain is critical. Improved refrigeration equipment and increased temperature monitoring are probably the keys to further improvement.

It is interesting to see the new opportunities for transportation lanes in the world today, including the widening of the Panama Canal, transit through the Arctic during certain times of the year, and the potential for refrigerated rail transport from Europe to China. These new opportunities do not necessarily help the United States directly, but they provide a greater flow of goods to many parts of the world.

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Recently, a three-month evaluation was completed by Creative Thermal Solutions (CTS) to document the efficiency of the unique HCR air door.

CTS is a leading test lab for products in the HVAC and refrigeration industries.

The results verified that the HCR Model AC (Single Air Door) is 80% efficient when stopping air infiltration and energy transfer between rooms with different temperatures.

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